

EFFECT OF VARYING WATER CONTENTS IN OIL PACKED SARDINE AND MACKEREL

Although standard methods are available (Anon, 1964) for processing sardine and mackerel, canners adopt techniques befitting their need and facility with the result that very often the products fall short of the specifications prescribed for such products. The most serious defect noticed in these products is the highly variable water content in the fill oil which can be regulated only by a process of pre-cooking after or before brining of the raw material. The present note summarises the observations made in experiments on cans having varying water contents on shelf life of canned material.

Raw material used in the experiments was collected from Cochin in the fresh condition and brought to the laboratory under ice. Sardine and mackerel thus obtained were packed in unlacquered cans

according to the recommended procedure but under altered conditions of pre-cook to provide products of varying water contents. Analyses of the incubated cans were carried out every month and the overall quality of the product judged organoleptically. Moisture and free fatty acids (FFA) were estimated according to AOAC (1955) and peroxide value (PV) by the method of Lea (1938).

The changes in physical and biochemical properties of canned sardine having 5% and above 25% of water in filled oil are shown in Table I. Samples having higher percentage of water in the can showed comparatively lower shelf life developed black stain on the can within 10-15 days of storage (Fig. 1) and showed comparatively higher rate of increase in PV and FFA in oil during storage. On the other

TABLE I CHANGES IN PHYSICAL AND BIOCHEMICAL PROPERTIES OF
CANNED SARDINE DURING STORAGE AT 37°C

Days of storage	Sample	A. Water content over 25%			B. Water content less than 5%				*** Intensity of can blackening
		Changes in filled oil		Changes in meat		Organoleptic changes		Intensity of can blackening	
		* PV	***FFA	PV	FFA	Colour	Odour	Texture	
0	A	6.235	0.5500	4.310	4.010	Fair-Good	Fair-Good	Fair-Good	—
	B	5.910	0.3980	4.025	3.950	Good	Good	Good	—
15	A	12.58	0.9524	4.730	4.253	Fair-Good	Fair-Good	Fair-Good	½+
	B	9.105	0.4985	4.205	3.800	Good	Good	Good	—
45	A	16.85	1.234	9.540	4.925	Fair	Fair	Fair	+
	B	12.80	0.7543	6.850	4.230	Fair-Good	Good	Fair-Good	—
75	A	20.25	1.756	16.43	5.850	Fair	Slightly rancid	Fair-Poor	+
	B	15.45	0.985	10.90	4.825	Fair	Fair	Fair	½+
105	A	25.10	2.035	22.25	6.715	Fair	Rancid	Poor	++
	B	18.20	1.230	14.10	5.020	Fair	Fair	Fair	½+
150	A	30.95	2.825	30.80	7.918	Fair-Poor	Rancid	Poor	+++
		21.20	1.720	20.10	5.825	Fair	Fair-Poor	Fair	½+

* Peroxide value

M. eq. Peroxide/Kg fat

** Free fatty acid
(% oleic acid)

*** ½+ = Very slight staining

+ = Slight staining

++ = Moderate staining

+++ = Heavy staining

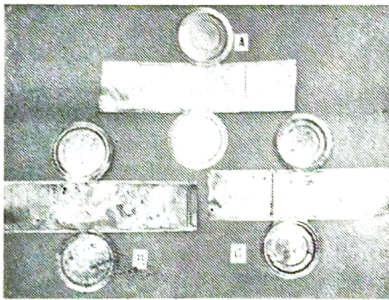


Fig 1. Intensity of can blackening A: Control. B. Sample with over 25% water. C: Sample with below 5% water.

hand samples having lower percentage of water in the can exhibited higher storage life without any black stain during 75 days of incubation. Development of rancidity is very slow almost half of that of the samples having higher water content.

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Deteriorative changes in oil is also found to affect the quality of the canned material as indicated in the table. Changes brought about in ground-nut oil by re-torting in presence and absence of water and during storage are significant. PV and FFA values (3.9 & 0.03) of the oil increase to 6.1, 0.12 and 5.4, 0.06 respectively immediately after processing. Changes in physical and biochemical properties of canned mackerel are almost similar to those of canned sardine.

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